

How to move a CMEX in the Collision Hall

This procedure outlines the procedure to be followed to move a CMEX in the CDF Collision Hall to service components or open an End Plug.

Due to the weight and cost of a CMEX Arch, it is required that the head of the Research Division review and approve this moving procedure.

Approvals:

(CDF Department Head)

(Date)

(Research Division Head)

(Date)

(Accelerator Division Head)

(Date)

1.0 Controlled Copies of this procedure.

Two controlled copies of this procedure will exist.

One will be held in the CDF Department Office.

One will be held in the CDF (B-0) Assembly Hall Room 101.

All other copies will be marked, " **INFORMATIONAL COPY ONLY** "

2.0 The Procedure.

STEP 1: Identify Key Personnel and their Responsibilities

2.0.1: Objective: To identify the responsibilities of each individual involved in the movement of the CMEX in the Collision Hall.

2.0.2 Responsibilities:

a). **Co-Ordinator:** will oversee the movement operation from a distance great enough to easily see all personnel and equipment involved in the move and to watch for over-head obstructions. He will report any developing or potential problems to the task leader. At no time will the co-ordinator take over for the task leader. The co-ordinator is there to assist and insure that overall safety is being maintained.

b). **Responsible Engineer:** may be called on to function as the co-ordinator. May also be called upon to solve structural / mechanical problems such as: how to move obstacles, or how to cross gaps in the floor. He will be a structural or mechanical engineer designated by CDF.

c). **Task Leader:** will insure that all personnel under his direction have performed their checks of the equipment and will insure that the equipment is installed properly. He will make certain that his personnel are located in their designated areas before the move begins (to include the co-ordinator or the responsible engineer). He will specify who will operate equipment. He will move freely in the work area to insure that the movement of the CMEX is slow and completely controlled. His directions will be followed completely and therefore he becomes responsible for personnel and equipment involved during the move. **NO** movement of the CMEX will be conducted without his presence.

d). **Workers:** will install all equipment and will insure that the equipment is serviceable and free from defects. They will keep the area clean and free from obstructions and will follow all directions from the task leader.

e). **Hydraulic Pump Operator:** will be designated by the task leader and will be qualified to operate the equipment used to push and pull the Arch.. He will follow all directions from the task leader.

STEP 2: Area Preparation

CAUTION! Rolling a CMEX over loose debris could cause the Hillman Rollers to bind or stop suddenly. This could cause damage to the Hillman Rollers.

2.1.1: Objective: To provide a safe working environment for the safety of the personnel as well as the CMEX.

2.1.2: Procedure: The surface on which the CMEX will be moved, will have all obstacles moved clear of the area and will have the area around them completely clear of debris. During the move, the workers will continuously verify that no objects are lying in the movement area of the Hillman Rollers.

STEP 3: Key Equipment/Inspection of Equipment

2.1.3: Objective: To maintain proper performance of equipment for serviceability and safety.

2.1.4: Equipment:

- a). Hillman Rollers: will be free from defects and will roll easily.

STEP 4: Placement of Equipment / Personnel

NOTE! While conducting the move, all directions will be given ONLY by the task leader.

- a). The task leader is free to move around the work area to supervise and give instructions.
- b). The co-ordinator will stay at such a distance to allow himself a clear view of all workers and the entire CMEX. Overall safety is his key concern. He may be located on a personnel lift, if this provides the best view. To avoid confusion among the workers, the co-ordinator communicates to the task leader only.

NOTE: Use either 2.2 "Opening Procedure," or 2.3 "Closing Procedure."

2.2 Opening Procedure

STEP 5 Points to check before beginning CMEX move.

2.2.1 Objective: To insure that CMEX is ready to move.

WARNING! These items **MUST** be checked and confirmed before any moving operation is performed on the CMEX.

2.2.2 Complete Checklist under 3.0.1.

STEP 6: Setting guide rails

WARNING! Hands and fingers should never be placed between rails and floor. Serious injury could result.

2.2.3 Objective: To safely install a guide system, so the CMEX can be brought back to the original position.

2.2.4 Installation procedure for guide rail:

- a). Lay steel guide rail (1) on floor, over anchor holes.
- b). Place brass guide bars (2) in guide slot in rail.
- c). Bolt brass guide bars (2) to CMEX Hillman Rollers (2).
- d). Bolt steel guide rail (1) to floor.

NOTE! Do not remove guide rail system after CMEX has been opened. This is the alignment system to put CMEX back in original position.

STEP 7: Moving CMEX away from Detector (pull using a come-along)

2.2.4 Procedure to move CMEX away from Detector.

- a). Install eyebolt in wall.
- b). Install eyebolt in base of CMEX.
- c). Install (1-1/2 ton capacity) come-along between two (2) eyebolts.
- d). Remove chocks from under Hillman Rollers.
- e). Using come-along, move CMEX to desired position.
- f). Remove, clean and store moving equipment.

2.3 Closing Procedure

STEP 5 Points to check before beginning CMEX move.

2.3.1 Objective: To insure that CMEX is ready to move.

WARNING! These items **MUST** be checked and confirmed before any moving operation is performed on the CMEX.

2.3.2 Complete Checklist under 3.0.1.

STEP 6: Moving CMEX toward the Detector (push using a hydraulic jack)

2.3.3 Procedure to move CMEX toward the Detector.

- a). Fill space between jacking surface (wall) and the base of the CMEX, using timber and one (1) double acting hydraulic cylinder (maximum capacity 10 ton).
- b). Using small electric hydraulic pump, extend cylinder to full stroke.
- c). Retract cylinder.
- d). Add hard wood spacer between hydraulic cylinder and wall to make up for movement of CMEX.
- e). Repeat steps b)., c). and d)., until CMEX is in desired position.
- f). Place chocks against Hillman Rollers.
- g). Remove, clean and store moving equipment

STEP 7: Remove Guide Rail system

2.3.4 Objective: To provide an unobstructed floor area and a safe working area.

2.3.5 Procedure to remove rail system used in CMEX move

- a). Remove and store brass guide rails (2).
- b). Remove and store steel guide rail.
- c). Clean up area.

3.0 Checklist

3.0.1 Person completing Checklist _____ Date _____

3.0.2 The following **Must** be checked and confirmed before any moving operation is performed.

_____ Confirm that all tracks and guide rails are free of debris (task leader).

_____ Confirm that there are no interferences (task leader).

4.0 Deviations from the Procedure

None at this time.

5.0 Required Training and Authorized Training Personnel.

5.0.1 To be an Authorized Instructor, the person must have several years experience in the rigging field. The person must be designated by the Responsible Engineer.

5.0.2 When an Authorized Instructor is present, the operation may declared to be a training session. No previous training is required by the other members of the team

5.0.3 To be a Co-Ordinator: the individual must have a number of years of experience in the rigging field or have been trained by the "Authorized Instructors," in this procedure. The qualifications of this individual are evaluated by the Responsible Engineer or Authorized Instructor.

5.0.4 To be a Task Leader: the individual must have a number of years of experience in the rigging field or have been trained by the "Authorized Instructor," in the procedure. The qualifications of this individual are evaluated by the Responsible Engineer or Authorized Instructor.

LIST OF RESPONSIBLE ENGINEERS FOR THIS PROCEDURE

Name GRIMSON, JOHN ID # 330 .
Last, First

Name PAWLAK, JOHN ID # 9381 .
Last, First

Name ID # .
Last, First

Name ID # .
Last, First

Name ID # .
Last, First

Name ID # .
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Last, First

Name _____ ID # _____
Last, First

LIST OF AUTHORIZED INSTRUCTORS FOR THIS PROCEDURE

Name GRIMSON, JOHN ID # 330
Last, First

Name SHOVAN, ROBERT ID # 851
Last, First

Name _____ ID # _____
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Name	ID #
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6.0 Training Materials.

None at this time.

7.0 List of Trained People for this procedure.

The most current copy of this training list must be kept with the controlled copies of this movement procedure. The controlled copies are maintained in the CDF Department Office and the CDF Front Office. If the trained individual's name is not on the controlled copy list, then that individual is NOT authorized to operate the specified equipment.

7.1 Authorized Co-Ordinators:**ALL AUTHORIZED INSTRUCTORS ARE AUTHORIZED CO-ORDINATORS**

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7.2 Task Leader:

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8.0 References and Supporting Documentation.

None at this time.